

FIG. 1

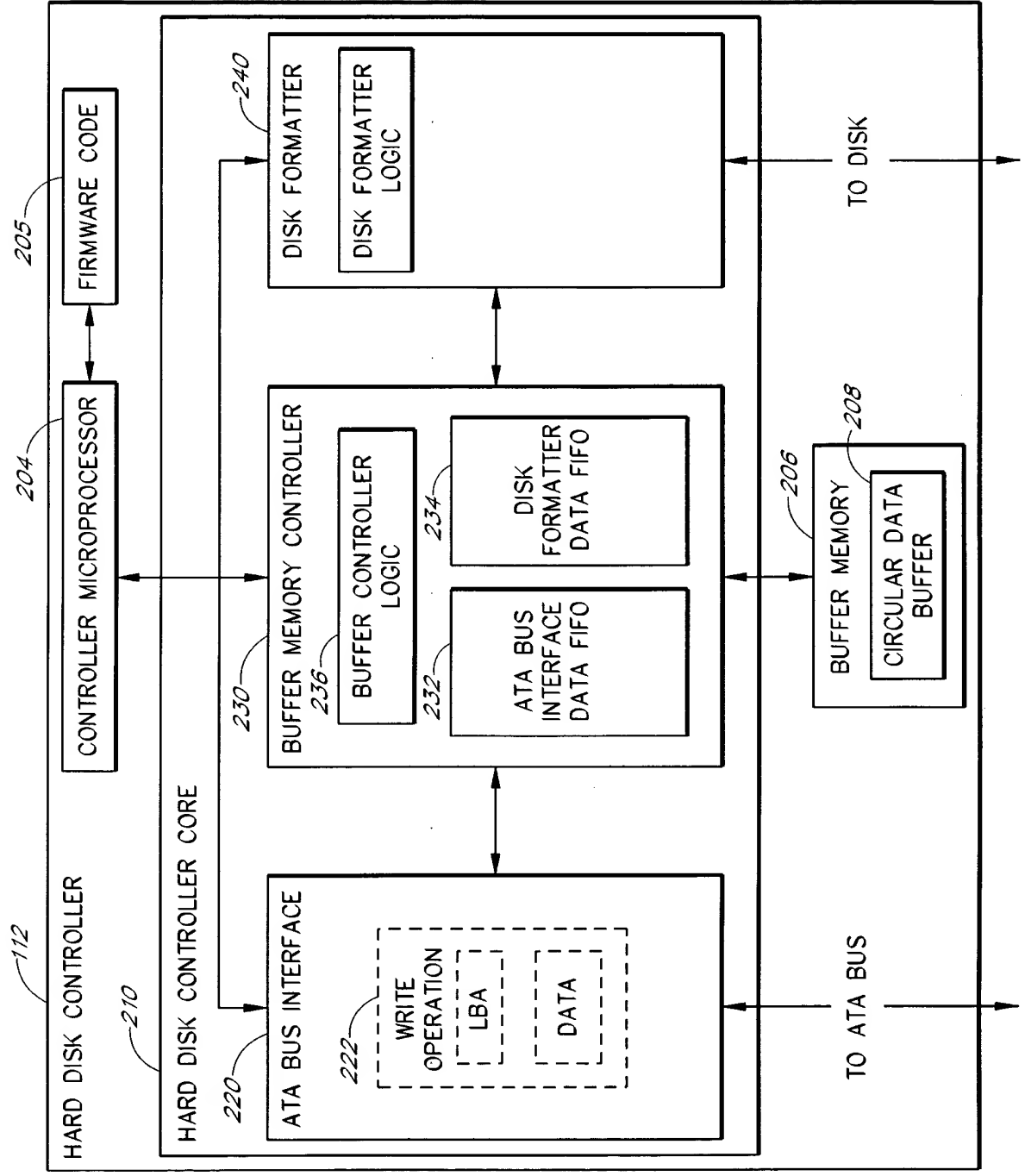


FIG. 2

FLOW OF WRITE
OPERATION DATA

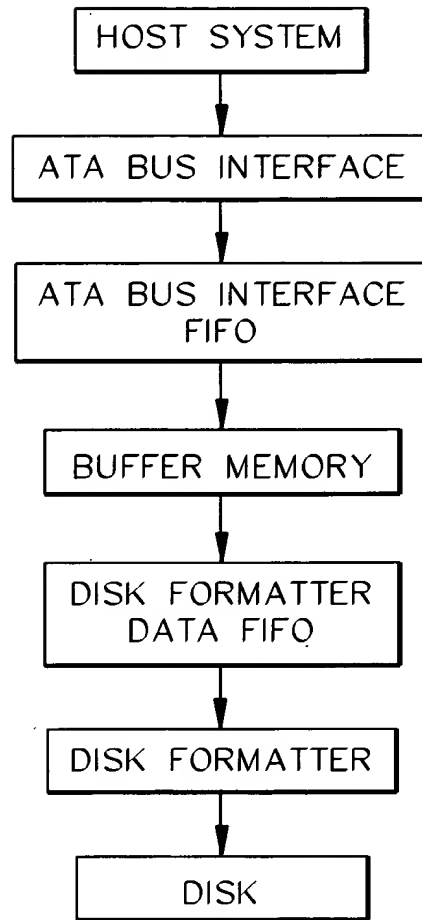


FIG. 3

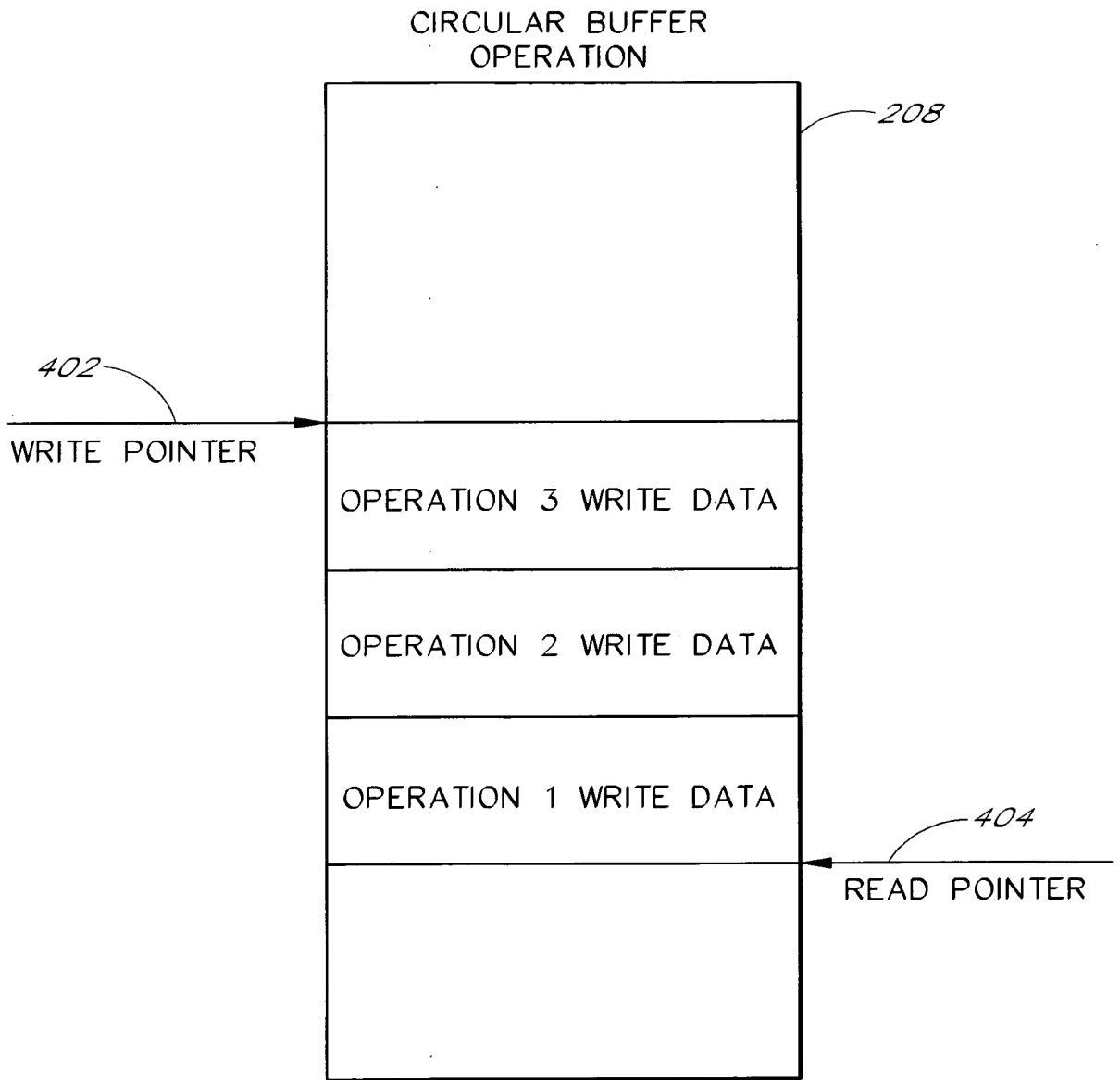


FIG. 4

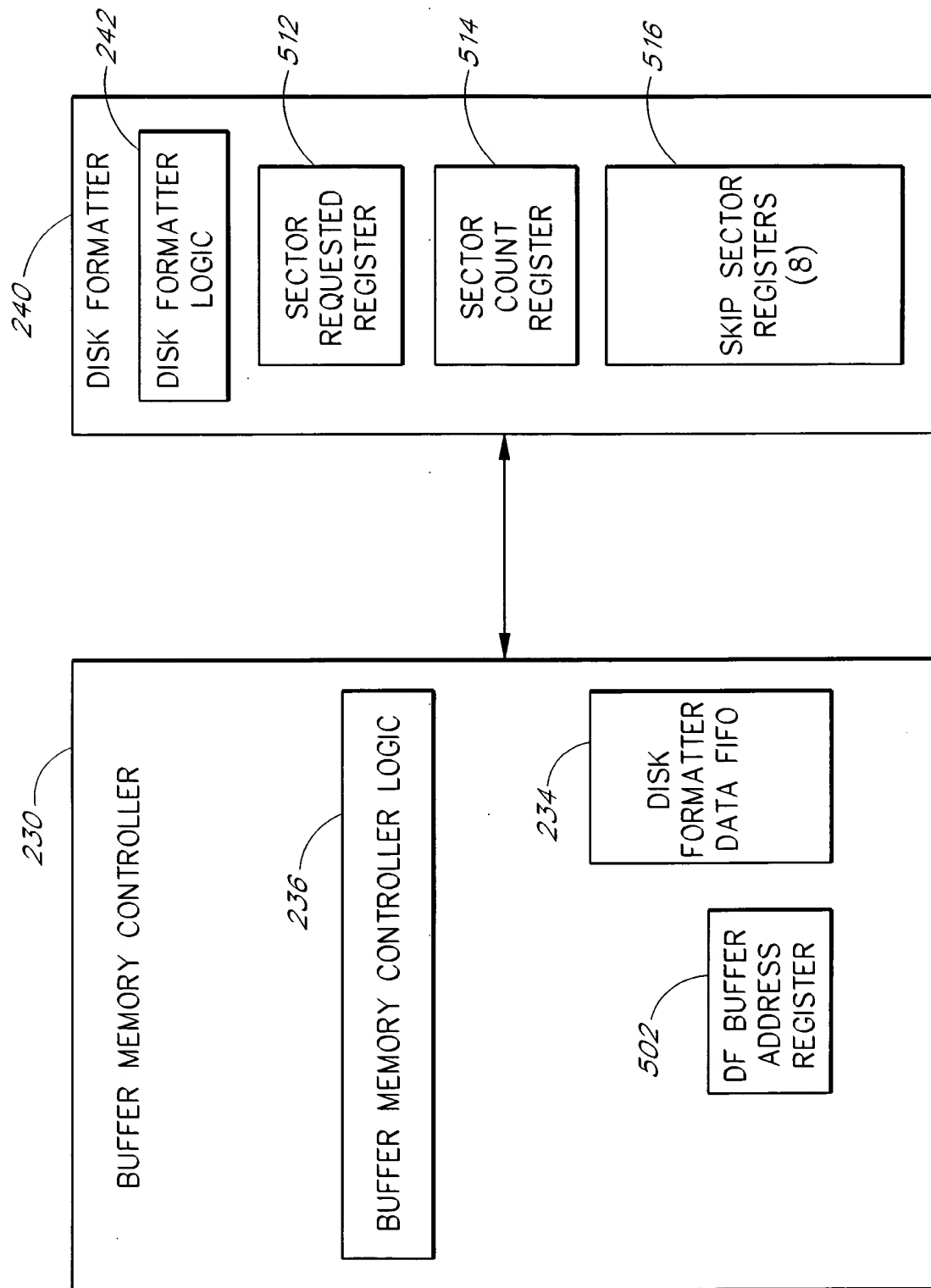


FIG. 5

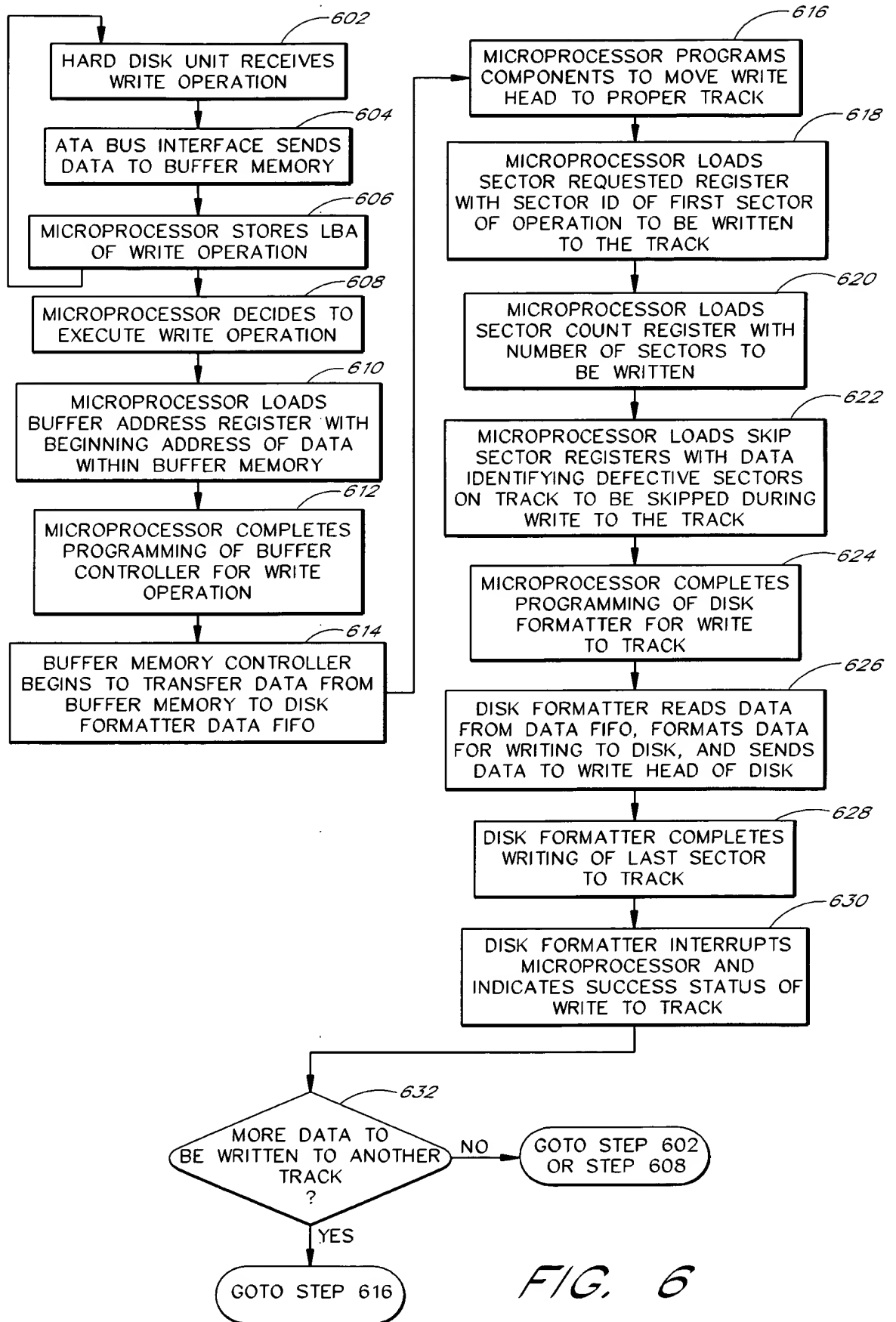


FIG. 6

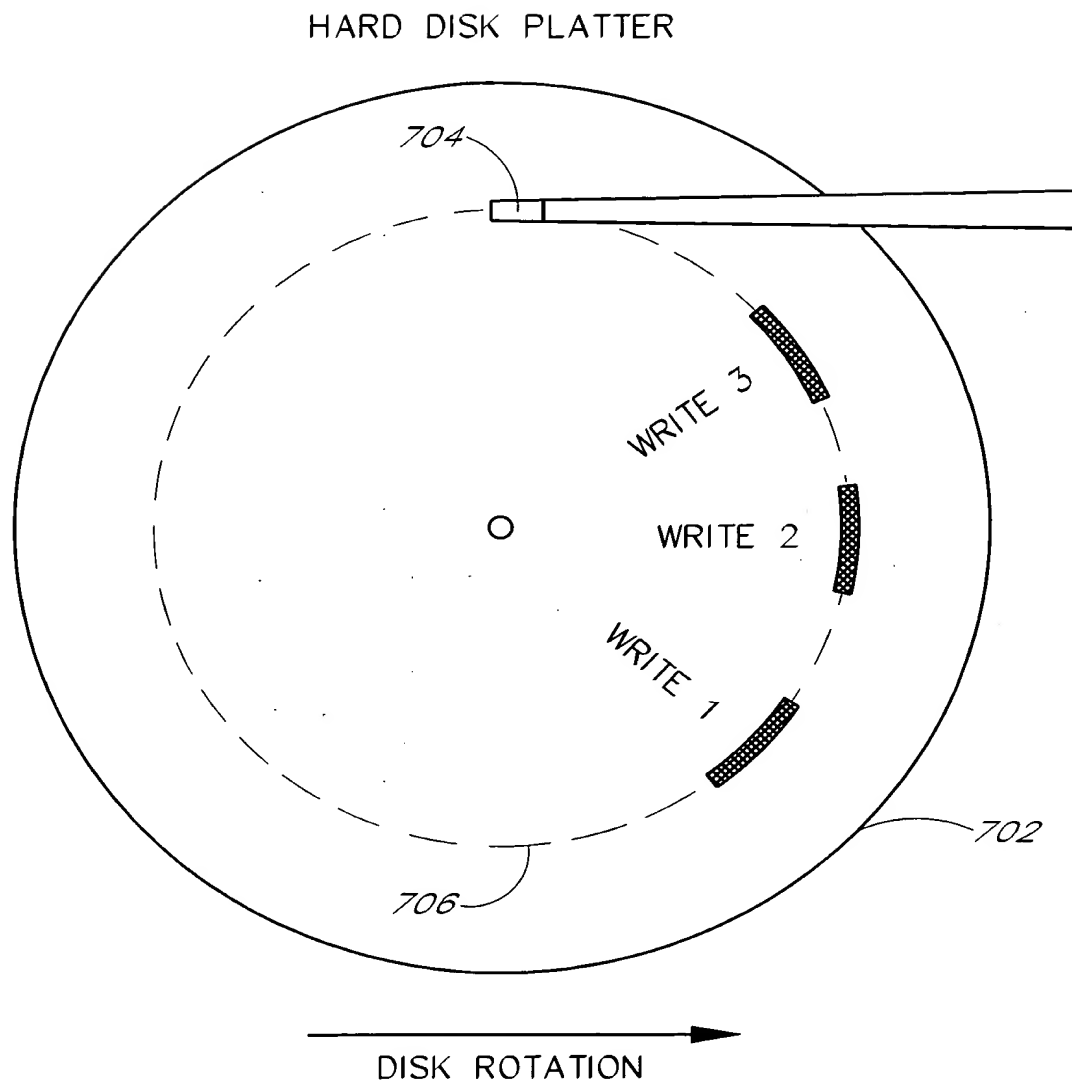


FIG. 7

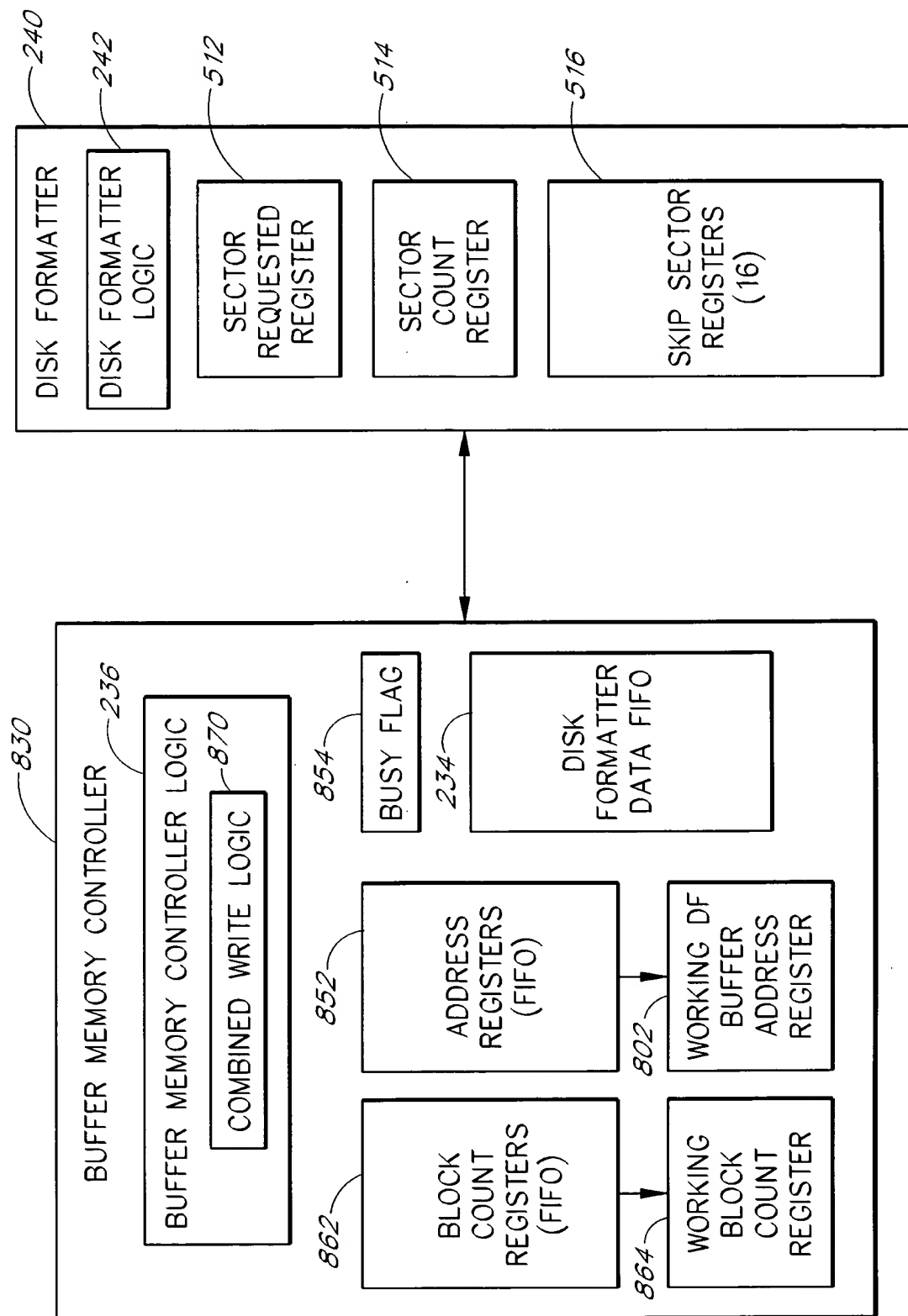



FIG. 8

900 

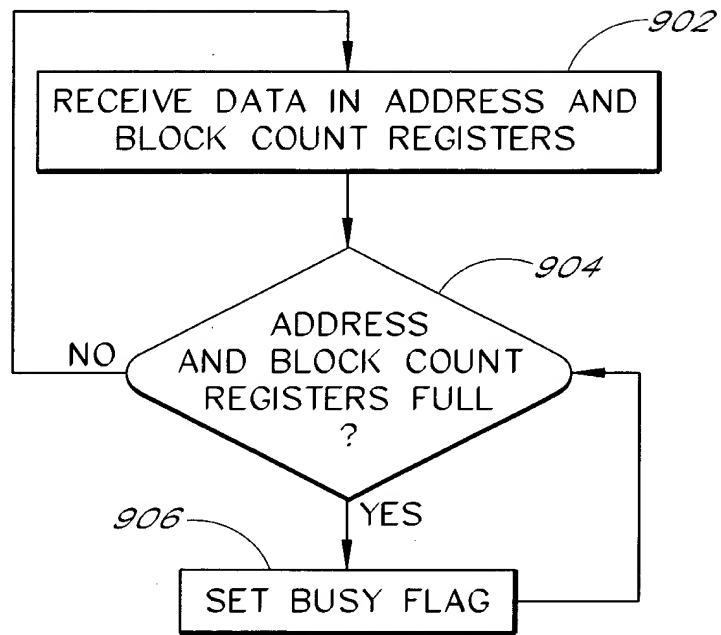


FIG. 9A

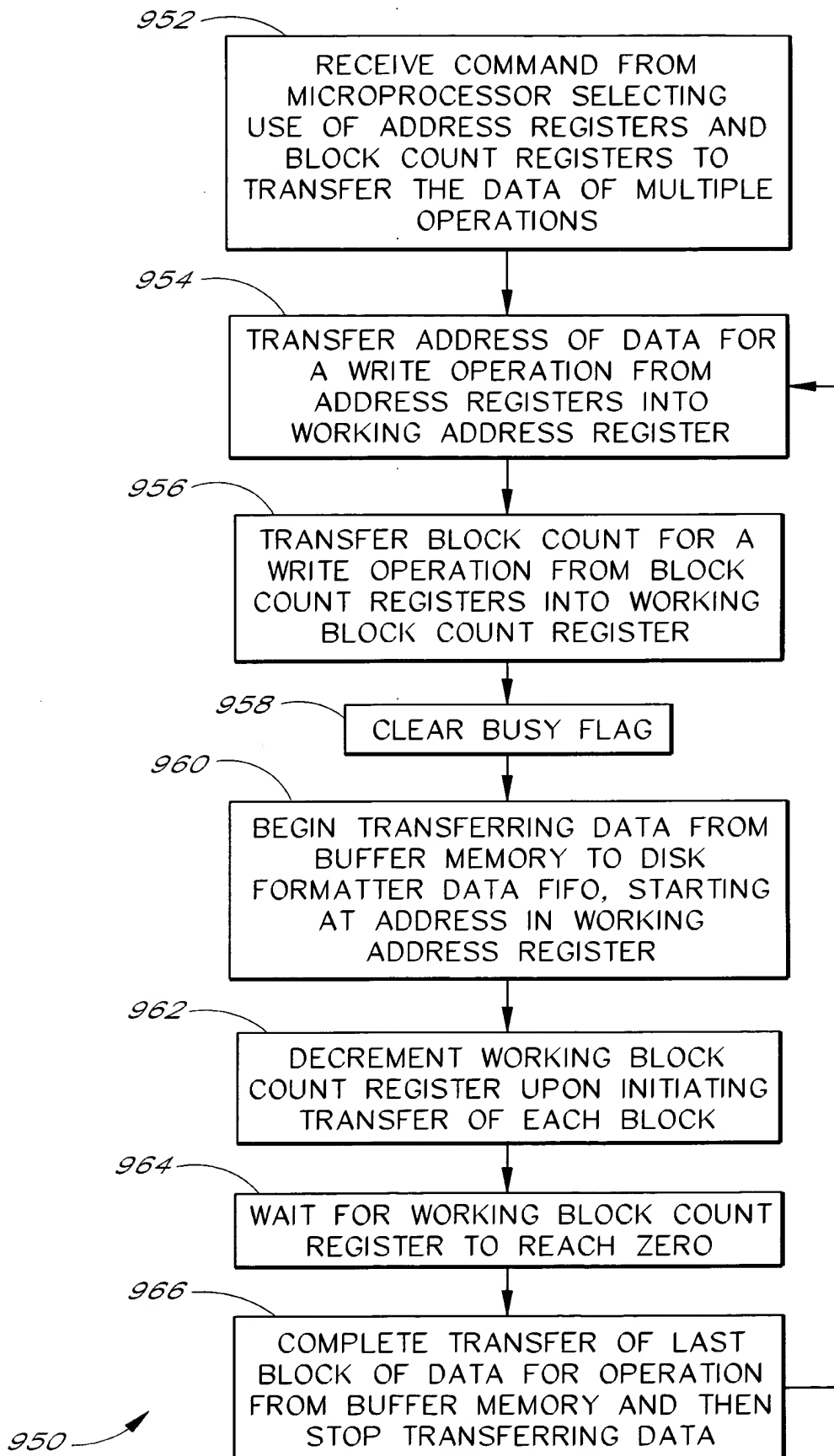


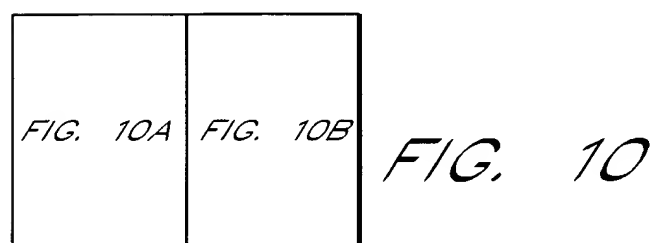
FIG. 9B

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graph TD
    1002[HARD DISK UNIT RECEIVES WRITE OPERATION] --> 1004[ATA BUS INTERFACE SENDS DATA TO BUFFER MEMORY]
    1004 --> 1006[MICROPROCESSOR STORES LBA OF WRITE OPERATION]
    1006 --> 1008[MICROPROCESSOR IDENTIFIES TWO OR MORE WRITE OPERATIONS THAT ARRIVE OUT OF ORDER WITH RESPECT TO THE LOCATION OF THE CORRESPONDING SECTORS ON A TRACK]
    1008 --> 1010[MICROPROCESSOR ORDERS WRITE OPERATIONS BASED UPON LOCATIONS ON TRACK]
    1010 --> 1012[MICROPROCESSOR LOADS ADDRESS REGISTERS WITH BEGINNING ADDRESSES OF DATA BLOCKS FOR WRITE OPERATIONS WITHIN BUFFER MEMORY]
    1012 --> 1014[MICROPROCESSOR LOADS BLOCK COUNT REGISTERS WITH NUMBER OF DATA BLOCKS FOR EACH WRITE OPERATION]
    1014 --> 1000(( ))
    1000 --> 1002

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FIG. 10A



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graph TD
    1016[MICROPROCESSOR COMPLETES PROGRAMMING OF BUFFER CONTROLLER FOR WRITE OPERATIONS] --> 1018[BUFFER MEMORY CONTROLLER BEGINS TO TRANSFER DATA OF WRITE OPERATIONS FROM BUFFER MEMORY TO DISK FORMATTER DATA FIFO]
    1018 --> 1020[MICROPROCESSOR PROGRAMS COMPONENTS TO MOVE WRITE HEAD TO PROPER TRACK]
    1020 --> 1022[MICROPROCESSOR LOADS SECTOR REQUESTED REGISTER WITH SECTOR ID OF FIRST SECTOR OF FIRST OPERATION TO BE WRITTEN]
    1022 --> 1024[MICROPROCESSOR LOADS SECTOR COUNT REGISTER WITH TOTAL NUMBER OF SECTORS TO BE WRITTEN FOR ALL OPERATIONS]
    1024 --> 1026[MICROPROCESSOR LOADS SKIP SECTOR REGISTERS WITH DATA IDENTIFYING SECTORS ON TRACK TO BE SKIPPED BETWEEN WRITE OPERATIONS AS WELL AS DATA IDENTIFYING DEFECTIVE SECTORS]
    1026 --> 1028[MICROPROCESSOR COMPLETES PROGRAMMING OF DISK FORMATTER FOR WRITE TO TRACK]
    1028 --> 1030[DISK FORMATTER READS DATA FROM DATA FIFO, FORMATS DATA FOR WRITING TO DISK, AND SENDS DATA TO WRITE HEAD OF DISK]
    1030 --> 1032[BUFFER CONTROLLER SUPPLIES DATA FROM SUCCESSIVE WRITE OPERATIONS]
    1032 --> 1034[DISK FORMATTER COMPLETES WRITING OF LAST SECTOR TO THE CURRENT TRACK]
    1034 --> 1036[DISK FORMATTER INTERRUPTS MICROPROCESSOR AND INDICATES SUCCESS STATUS OF WRITE OPERATION]
    1036 --> 1038{MORE DATA TO BE WRITTEN TO ANOTHER TRACK?}
    1038 -- YES --> 1020
    1038 -- NO --> 1002_1008([GOTO STEP 1002 OR STEP 1008])
  
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FIG. 10B

FIG. 10B

00000" 9554960

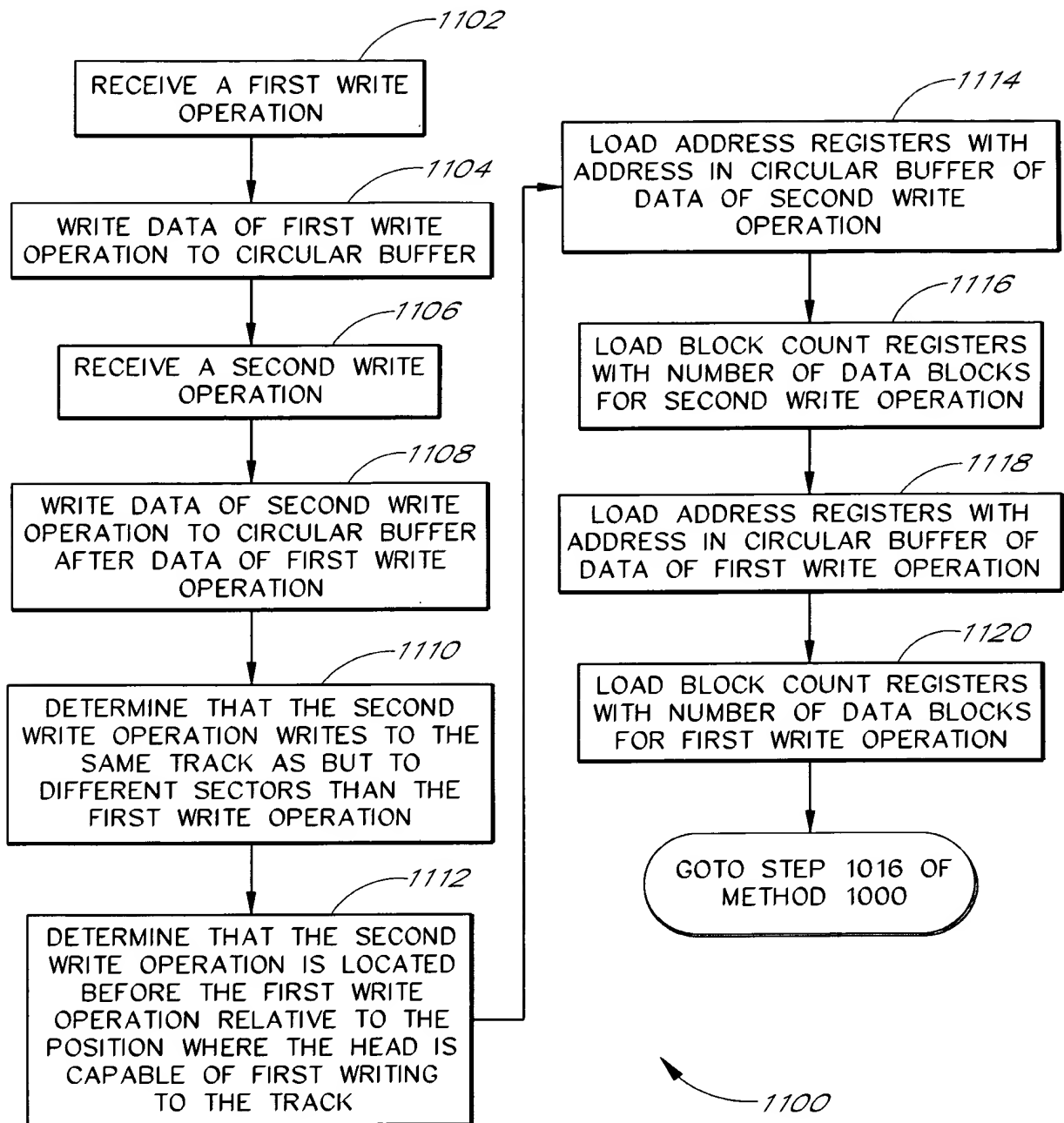


FIG. 11